[600.1308; A4099; HEM03/609A]

COUNTERPOISE DEVICE AND METHOD FOR CANTILEVERED PRINTING PRESS CYLINDERS

BACKGROUND INFORMATION

[0001] The present invention relates generally to web printing presses and more particularly to a method and device for counterpoising a printing press cylinder.

[0002] In certain printing presses, a printing press cylinder may be cantilevered when the press is stopped to permit a printing sleeve, such as a tubular printing blanket, to be slid axially over the cantilevered cylinder. U.S. Patent No. 5,429,048 to Gaffney et al. discloses an offset lithographic printing press with such a blanket, and is hereby incorporated by reference herein.

[0003] U.S. Patent Nos. 6,343,547 and 5,105,498, hereby incorporated by reference herein, disclose counterpoise devices for providing support while the printing press cylinder is cantilevered. During a printing operation, the cylinder is no longer cantilevered, e.g. the cylinder is supported at the other end by a movable bearing, and the counterpoise mechanism is out of contact with the cylinder.

BRIEF SUMMARY OF THE INVENTION

[0004] An object of the present invention is to provide for easier adjustment of the counterpoise device. An alternate or additional object of the present invention is to simplify the counterpoise device. Another alternate or additional object of the present invention is to permit proper motion of the counterpoise device.

[0005] The present invention provides a counterpoise device for cantilevering at least one cylinder of a printing press, the device including a movable counterpoise element for selectively contacting the cylinder, a stationary mount, a guide link rotatably attached to the stationary mount plate and rotatably attached to the movable counterpoise

element; and an actuating device connected to the movable counterpoise device at a different location than the guide link for moving the counterpoise device with respect to the cylinder.

[0006] The counterpoise device of the present invention permits for simple guiding of the motion through both the actuating device and the guide link. The dual pivot points on the guide link permit for easier adjustments and vertical and horizontal movement of the counterpoise element.

[0007] Preferably, the counterpoise element is a lift plate with a hole for receiving an end of the cylinder. The lift plate may have a further hole for an eccentric of the actuating device.

[0008] Preferably, a second movable counterpoise element is provided with a second guide link rotatably attached to the mount plate. The actuating device then may actuate both counterpoise elements at the same time.

[0009] The guide link may be attached to the counterpoise element via an adjustment plate fixable to the counterpoise element, for example via bolts fixedly attachable to the counterpoise element. The adjustment plate may have slots for receiving the bolts.

[0010] The guide link may be attached rotatably to the mount plate and the counterpoise element via shoulder bolts or bearings.

[0011] The actuating device may move the counterpoise elements in a first direction, and the pivot points of the guide link may form an imaginary line which is not parallel to the first direction, and is preferably perpendicular to the first direction.

[0012] The present invention also provides a printing unit having the counterpoise device, a printing press having the printing unit. The printing press preferably is a web

offset printing press with two blanket cylinders being side-by-side, i.e. with the web traveling vertically between the two blanket cylinders. However, the web may also travel horizontally.

[0013] The present invention also provide a method for counterpoising a cylinder comprising: moving a counterpoise element using an actuating device, and constraining the movement of the counterpoise element using a dual pivot guide link.

BRIEF DESCRIPTION OF THE DRAWINGS

[0014] The present invention will be further described with respect the following Figures, in which:

[0015] Fig. 1 shows schematically a side view an embodiment of the counterpoise device of the present invention;

[0016] Fig. 2 shows a perspective view of the Fig. 1 view without the actuating device; and

[0017] Fig. 3 shows the counterpoise device with two blanket cylinders of an offset web printing press.

DETAILED DESCRIPTION

[0018] Fig. 1 shows a first counterpoise element 10 and a second counterpoise element 20, here designed as lift plates with holes 11, 21, respectively, for selectively counterpoising ends of blanket cylinders 70, 80, respectively. Fig. 1 shows the counterpoise device cantilevering the blanket in cylinders 70, 80. The counterpoising elements 10, 20 can move in directions D1, D2 so that during printing of the printing press elements 10, 20 no longer contact cylinders 70, 80, respectively. An actuating device 30, for example with two eccentrics 36, 38 located in holes in the counterpoise elements 10, 20, respectively, and having an actuator 32 shown schematically, can provide selective movement of the counterpoising elements 10, 20.

[0019] Adjustment plates 18, 28 can be fixedly attached to the counterpoising elements 10, 20 via bolts 90, which fit in slots 92 of the adjustment plates. The bolts 90 may be loosened to permit adjustment of plates 18, 28 with respect to the counterpoising elements 10, 20, but are fixed again prior to counterpoising.

[0020] Pivotally attached to the adjustment plates 18, 28 are guide links 16, 26, respectively, which are also pivotally connected to a stationary mount plate 40. Bolts or bearings 12, 14 and 22, 24, respectively, are used to provide the two pivots for each guide link 16, 26. The slots 92 of the adjustment plate 28 may be parallel to an imaginary line formed between the axes of the blanket cylinders 70, 80, and an imaginary line between two of the bolts 92 of one plate 28 arranged parallel to the imaginary line formed by the pivot points of one of the guide links 16, 26.

[0021] A mounting block 50 may be provided for the mount plate 40.

[0022] The guide link 16 thus has two pivot points formed by bolts 12, 14, and an imaginary line between these points may be approximately perpendicular to the direction of motion D1.

[0023] Fig. 2 shows a perspective view of the Fig. 1 embodiment, and Fig. 3 shows the two blanket cylinders 70, 80 of a web offset printing press having a vertically traveling web, i.e. the blanket cylinders of a print unit are spaced horizontally and the web travels therebetween. The present invention however may also be used with blanket cylinders placed vertically one over the other, and may be used with the print units and printing presses described in incorporated-by-reference U.S. Patent Nos. 6,343,547 and 5,105,498. While the printing cylinder in the shown embodiment has been described as a blanket cylinder, it could also be another cylinder such as a plate cylinder.

[0024] List of Drawing Numbers

1 printing press

10 counterpoise element

11	hole
12	bolt
14	bolt
16	guide link
18	adjustment plate
20	counterpoise element
21	hole
22	bolt
24	bolt
26	guide link
28	adjustment plate
30	actuating device
32	actuator
36	eccentric
38	eccentric
40	mount plate
50	mounting block
70	blanket cylinder
80	blanket cylinder
90	bolts
92	slots